Name: **Enrolment No:**	

UPES

End Semester Examination, May 2025

Course: Modelling & Simulation **Semester: II**

Program: M.Tech (CSE) **Time: 03 hrs.**

Course Code: CSEG8003 **Max. Marks: 100**

Instructions: Attempt all questions

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Define confidence intervals and explain their role in validating simulation outputs.	**4**	**CO1**
Q 2	Compare and contrast partitioning data and partitioning algorithms in parallel simulations.	**4**	**CO2**
Q 3	Evaluate the different communication patterns observed in partitioned systems, providing examples.	**4**	**CO3**
Q 4	Illustrate how tools like Python or MATLAB facilitate multidimensional visualization.	**4**	**CO3**
Q 5	Explain why model validation is essential in analyzing simulation results.	**4**	**CO4**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Outline the steps involved in performing sensitivity analysis for evaluating simulation outputs.	**10**	**CO3**
Q 7	Differentiate between stepped-time and event-driven simulations, providing use-case scenarios for each.	**10**	**CO1**
Q 8	Describe the concept of stochastic modeling and explain how randomness is incorporated in simulations. OR Discuss how cross-validation and calibration are used in the process of validating simulation models.	**10**	**CO2**
Q 9	Demonstrate the structure and significance of simulation viewing tools, such as tables, graphs, and multidimensional interfaces.	**10**	**CO4**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	Explain the techniques and tools used for random variate generation in queueing system simulations and analyze their impact on system accuracy and performance. OR	**20**	**CO4**

	Design a simulation model for a distributed logistics system using parallel simulation concepts and evaluate how partitioning and inter-partition communication will be managed.		
Q 11	Compare and contrast different simulation output platforms (Terminal, MS Windows, X Windows, Web Interface) in terms of usability, flexibility, and performance.	**20**	**CO2, CO4**